Supplementary material for Brendan M. Kayes, Michael A. Filler, Morgan C. Putnam, Michael D. Kelzenberg, Nathan S. Lewis, and Harry A. Atwater, "**Growth of vertically aligned Si wire arrays over large areas (>1 cm^2) with Au and Cu catalysts"**, App. Phys. Lett.

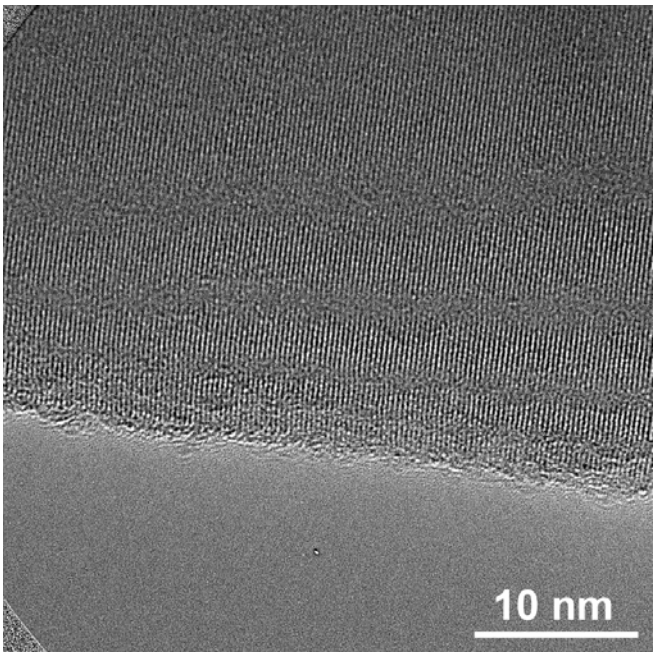

FIG. S1. TEM image of a Au-catalyzed, $SiCl_4$-grown nanowire. The vertical lines are lattice fringes, and the horizontal bands are due to the curved surface of the wire causing interference fringes. From this image, we infer a lattice spacing of 0.307 ± 0.004 nm, consistent with growth in the <111> direction.

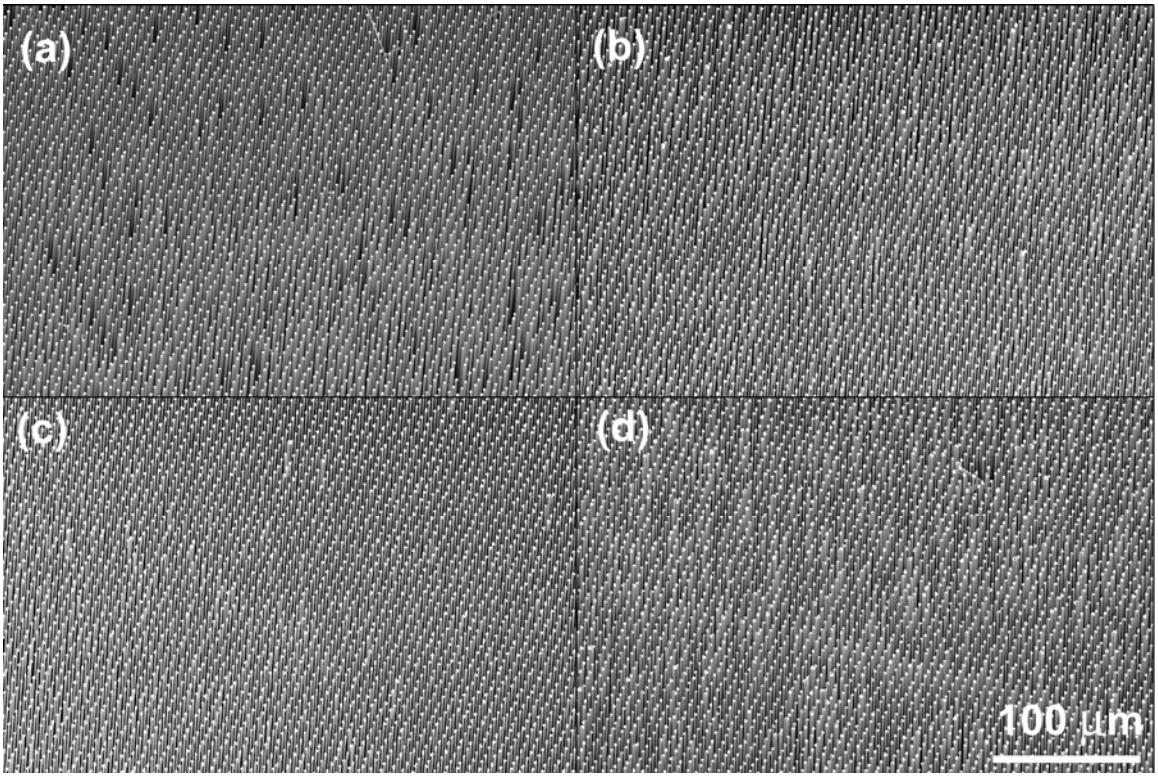

Fig. S2. Representative tilted SEM images of regions near each of the four corners of a 0.5 x 1 cm sample grown at 1000 ^{o}C with Cu catalyst, illustrating the uniformity over large areas. Scale bar applies to all panels.

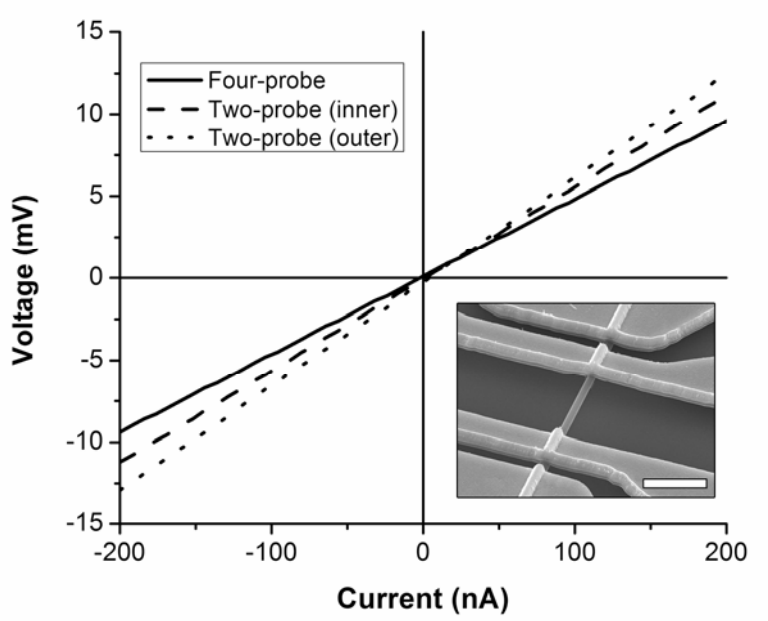

FIG. S3. A typical I-V measurement for an individually contacted nanowire using the four-point probe technique. The wire resistance for this sample was 50 kΩ, corresponding to a doping level of 2.9×10^{16} cm^{-3}, assuming the same carrier mobility as that in bulk Si. Inset: SEM image of a four-probe measurement device, viewed at 45°. The scale bar is 6 μm.

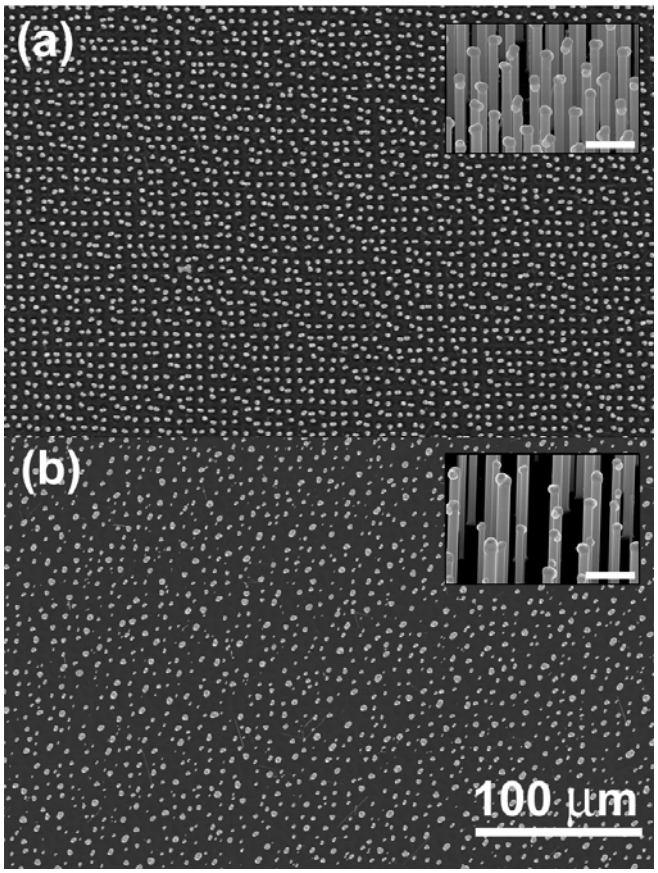

FIG. S4. Top-down and (inset) tilted SEM views of the Au-catalyzed Si wire growth at (a) 1075 ^{o}C and (b) 1100 ^{o}C, showing the breakdown in pattern fidelity due to the destruction of surface oxide. The 100 μm scale bar applies to both panels, and the scale bars in the insets are 10 μm.